Remarks

Applicants have amended the claims to indicate their process is directed: to forming a pearlite structure (Claim 1) from an article in which the carbon contained in the article is 0 to .77 wt% (Claim 1) that in one embodiment is a continuous layer (Claim 7) of from 10 to 1000 microns (new Claim 10) or of thickness equal to that of the iron article (new Claim 11). Support for the foregoing can be found, for example, in paragraph [0019] of the specification and at paragraph [0022].

The Examiner rejected claims 1, 2 and 7 under 35 USC 103(a) based on Ramanarayanan, in view of Garg and Hemsath. Applicants respectfully traverse that rejection.

Ramanarayanan discloses converting a carbon steel or carbon steel layer containing at least .7 wt% carbon and preferably .75 to 1.0 wt% carbon to a pearlite micro structure by heating above 900°C in a carburizing atmosphere and thereafter treating the pearlite layer to sulfur containing hydrocarbons to provide a pearlite/FeS corrosion inhibiting surface layer. Applicants submit that one with ordinary skill in the art would understand Ramanarayanan as teaching that what is being converted to pearlite must have greater than 0.7 wt% carbon. The Examiner in stating that Ramanarayanan in teaching that only the surface his carbon steel need have greater than .7 wt% carbon is being totally disingenuous. Indeed, that statement exemplifies taking a statement out of context in an attempt to render applicants' invention obvious.

Additionally, Ramanarayanan fails to teach use of an article having 0 to .7 wt% carbon throughout, or the use of a carbon super saturated CO/H_2 environment consisting essentially of CO (50 to 90 vol.%) and 10 to 50 vol.% H_2, and, having a carbon activity greater than 1.

Ramanarayanan also fails to teach first converting the article from a ferritic structure to an austenitic structure.

Garg is cited as disclosing carburizing a carbon steel using a carburizing atmosphere containing CO and H_2 which may contain 50 vol.% CO and almost 50 vol.% H_2.

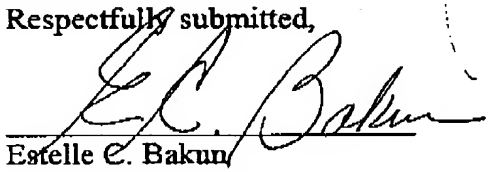
Garg, however, fails to disclose carburizing an iron article having less than 0.77 wt% carbon. Garg, like Ramanarayanan, also fails to disclose or suggest heating a low carbon iron article before treatment with a carburizing atmosphere to convert a ferritic structure to an austenitic structure. Thus, using the atmosphere of Garg in the process of Ramanarayanan still fails to render applicants' claimed process obvious.

Hemsath has been cited by the Examiner as teaching a preheating step to deoil an article before subjecting it to carburization. The Examiner contends that such pre-heating inherently will convert ferrite to austenite. Such, however, is not the case. Hemsath teaches preheating up to 800°F or 427°C well below the ferrite-austenite phase transition temperature of 727°C (See Figure 4 in applicants' Specification). Thus, the preheat treatment of Hemsath adds nothing to the deficiencies of Ramanarayanan and Garg.

Because the references fail to render the limitations of the independent claims obvious, they fail for the same reasons to render the dependent claims obvious.

In summary, the combined references fail to remotely disclose or suggest applicants' invention and applicants respectfully request the Examiner to withdraw his rejections and pass the case to issue.

Respectfully submitted,



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☐ Pursuant to 37 CFR 1.34(a)

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